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Tsumura Laboratory

TOKYO

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主幹 薬学博士 朝比奈泰彦

植物研究雜誌

THE JOURNAL OF JAPANESE BOTANY

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Vol. 32 No. 8 August 1957

Yoshiwo Horikawa* and Hisatsugu Ando*: **Phytogeographical notes on *Hypnum subimponens* Lesq. and *H. dieckii* Ren. & Card.****

堀川芳雄*・安藤久次*: *Hypnum subimponens* Lesq. と *H. dieckii* Ren. & Card. の分布について**

There is a close relationship between North America and the Japanese Archipelago in relation to the bryophytic flora. Numerous species of bryophytes have been recognized as being common to both areas. Most of these species belong to the holarctic element and only a few to the North Pacific, tropical or cosmopolitan element. Plants of the North Pacific element are distributed along the northern Pacific coast, in Asia from Kamchatka to Formosa and in North America from California to Alaska. They are *Macrodiplophyllum plicatum*, *Ptilidium californicum*, *Scapania bolanderi*, *Bartramiopsis lescurii*, *Mnium flagellare*, *Oligotrichum aligerum*, *Pleuroziopsis ruthenica*, *Pogonatum contortum*, etc.

Hypnum subimponens Lesq. and *H. dieckii* Ren. & Card. hitherto known to occur only in western North America have been found to exist in Japan and certain adjacent areas. This paper deals with these North Pacific species of *Hypnum* which were previously unknown in Asia, with special reference to their distribution and ecology.

The authors wish to express their thanks to Mr. W. B. Schofield of Nova Scotia, in providing much valuable data on the North American distribution of the species in question. Thanks are also due to several institutions and bryologists who have assisted them by loans or gifts of specimen.

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** Contributions from the Phytotaxonomical and Geobotanical Laboratory, Hiroshima University, N. Ser. No. 38.

Hypnum subimponens Lesq.

Hypnum subimponens Lesq. in Trans. Am. Phil. Soc. **13**: 14 (1863); Grout, Moss Flora N. Am. III, **3**: 127 (1932)—*Stereodon plumifer* Mitt. in Journ. Linn. Soc. **8**: 41 (1865).

Hypnum subimponens belongs to the group of species whose stems have large and thin-walled epidermal cells, and often appears much like other species of the same group, such as *H. callichroum*, *hamulosum*, *plicatulum*, etc. From *callichroum* and *plicatulum*, it is distinguished by the non-differentiated alar cells and by the larger and non-cordate leaves respectively. When plants of *H. subimponens* are modified and of small size, they seem to approach *H. hamulosum* very closely and it is difficult to separate it from the latter. The plants in Japan show a slight variation from N. American types in the form of the capsule, but in other respects such as the stem structure, leaf shape, areolation, peristomes, exothecial cells, spores, etc., they are recognized to be identical. Accordingly the authors believe at present that the Japanese plants may be treated under the same specific category as the N. American *H. subimponens*. As far as observations have been made on Japanese specimens, this species is quite variable in the shape and length of capsule and also in the size of the plant in having a tendency to become larger in southern localities or lower elevations.

From the material examined by the authors, a map showing the distribution of this species in Japan has been compiled (Fig. 1). The species is known from
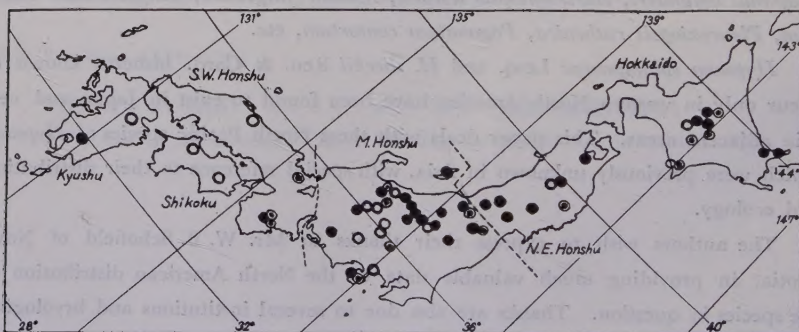
Fig. 1. Distribution of *H. subimponens* (open circles) and *dieckii* (solid circles) in Japan. Doubled circles show the occurrence of both species.

32 localities, most of which are situated in the northeastern half of Japan. As clearly seen in figure 2, which indicates the vertical distribution, the species occurs

exclusively in the zones of both temperate deciduous broad-leaved and subalpine or subarctic coniferous forests, and is not found in the lowland or alpine areas. As a result of the authors' study, the highest elevation attained by the species is on Mt. Shiroiwa in Chichibu where it ascends to 1850m above sea-level and the lowest is 200m in Samani, Hokkaido. With respect to the substratal feature, the result given below has been obtained from an examination of 27 specimens.

Rock	Bark	Decayed wood
51.9%	40.7%	7.4%

Figure 3 shows the total range of the two species in question. In N. America *H. subimponens* grows along the Pacific coast from California to Alaska (excl. the Aleutian Is.). Macoun reported this species from New Brunswick and Newfoundland on the opposite coast, but a personal communication from Mr. Schofield remarks that the Macoun's specimens have been proved to be both *H. imponens*. In Asia it is distributed in Amur,* Korea and Formosa besides Japan.

Specim. exam.** Hokkaido. Tokachi: Shikaribetsu-numa (ST-10037), Mt. Memuro (ST-15405); Ishikari: Aizan-kei (ST-23993), Tennin-kyo (ST-19654), Mt. Yubari (ST-18373), Simukappu-mura (ST-11157); Hidaka: Samani (ST-24432). N. E. Honshu. Iwate: Mt. Hayachine (A-14379, 14341, I-27730); Akita: Mt. Komagatake (Kobayashi- Herb. Nat. Sci. Mus. Tokyo, n. 1724). M. Honshu. Fukushima: Iizaka-machi (H-2483), Yama-gun, Mt. Jizo (A-14754); Gumma: Tone-gun, Tokura～Hatomachi-toge (A-3211); Saitama: Chichibu, Mt. Shiroiwa (I-20979), Mt. Akazawa (NG-4536); Kanagawa: Hakone (I-25972, T. Ozaki-125945); Niigata: Renge-onsen (I-11276), Mt. Korenge (I-11312, 11313, 11317); Toyama: Kurobe-kyo (I-39227); Nagano: Omachi (Y. Matsuda-A22225, 22226), Tokugo-toge (T. Seki-3615), Mt. Norikura (K. Morimoto-A18365), Kirigamine (T-8854), Mt. Yatsugatake (T-4689, 4706), Mt. Akaishi (T-6699); Shizuoka: Mt. Amagi (A-8467, 8497, NG-2941). S. W. Honshu. Kyoto: Kitakuwada-gun, Ashu Enshurin (NK-5627, 5687); Nara: Mt. Sanjo (T. Kodama-8884), Mt. Odaigahara (NK-6100, M. Mizutani-1933); Tottori: Mt. Daisen (A-17453, E. Nokubo-A6711). Shikoku. Tokushima: Mt. Tsurugi (O-2819); Ehime: Mt. Ishizuchi (M. Hara-4156, T. Seki-7146). Kyu-

* According to a personal communication from Dr. Persson, Stockholm.

** The names of the principal collectors are abbreviated as follows:
A—H. Ando, H—T. Higuchi, I—Y. Ikegami, NG—I. Nagano, NK—T. Nakajima, O—H. Ochi, ST—M. Saito, SZ—H. Suzuki, T—N. Takaki, W—R. Watanabe.

shu. Oita: Mt. Kuzyu (K. Negayama-A22085). Formosa. Tataka～Niitakashita (A. Noguchi-6545), Niitakashita～summit (A. Noguchi-6854). Korea. Mt. Kongo (G. Masamune- Herb. Nat. Sci. Mus. Tokyo, n. 2027).
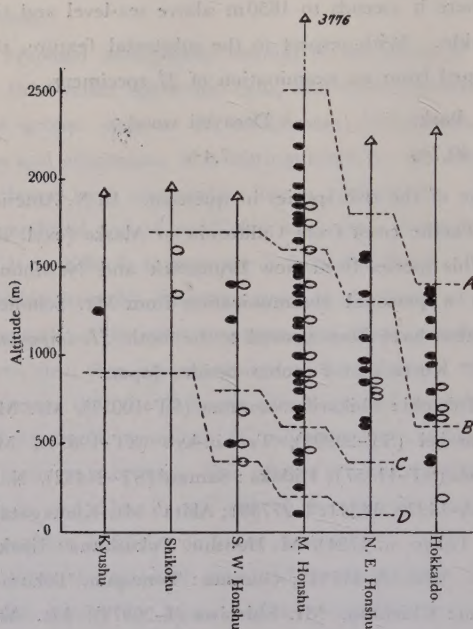
Fig. 2. Vertical distribution of *H. subimponens* (open circles) and *dieckii* (solid circle). △—The highest altitude of the land, A—Approximate mean altitude of the upper limit of subalpine coniferous forests, B—do. of temperate deciduous broad-leaved forests, C—do. of warm-temperate deciduous broad-leaved forests, D—do. of evergreen broad-leaved forests.

Range. N. America (California, Oregon, Washington, British Columbia, Yukon, Alaska), Japan (Hokkaido, Honshu, Shikoku, Kyushu), Formosa, Korea, Amur.

Hypnum dieckii Ren. & Card.

Hypnum dieckii Ren. & Card. in Bot. Centralbl. **44**: 423 (1890); Grout, Moss Flora N. Am. III, **3**: 128 Pl. 33 (1932)—*Hypnum canadense* Kindb. in Bull. Torr. Bot. Club **17**: 280 (1890)?—*Stereodon pulchroalaris* Broth. et Yasuda in Över. Finska Vet.-Soc. Förh. **62**: 39 (1919～'20)—*Brotherella pulchroalaris* Broth. in Engl.-Pr. Pflfam. ed. 2, **11**: 425 (1925)—*Calohypnum pulchroalare* Sakurai in Journ. Jap. Bot. **25**: 220, fig. 2 (1950)—*Stereodon tamakii* Broth. in Över. Finska Vet.-Soc. Förh. **62**: 39 (1919～'20)—*Hypnum tamakii* Broth. in Engl.-Pr. Pflfam ed. 2, **11**: 454 (1925): Ihsiba in Yadu, Nikko no Syokubutu to Dobutu 186, fig. 4 (1936); Doignon in Rev. bryol. **22**: 46 (1953)—*Brotherella fulvoaurea* Dix. in sched., Herb. Nat. Sci. Mus. Tokyo—*Stereodon amblyostegius* Mitt. sensu Okamura in Journ. Coll. Sci. Tokyo Imp. Univ. 36, **7**: 33, Tab. 16, F～K (1915)—*Hypnum hamulosum* B. S. G. sensu Hisauchi in Journ. Jap. Bot. **38**: 30 (1953)—*Hypnum circinatulum* Schimp. sensu Yano in Bot. Mag. Tokyo **68**: 196 (1955).

From Japan this species has been known under two synonymous taxa: *Hypnum tamakii* and *Brotherella pulchroalaris*. The authors' examination of authentic specimens of N. American *H. dieckii*, which were supplied through the courtesy of Dr. Crum of the National Museum of Canada, has revealed that it is not specifically distinct from the above-mentioned Japanese taxa (both types seen). *H. dieckii* is a species which has been rather inadequately understood and sometimes confused with other species such as *H. callichroum*, *imponens*, *oldhami* (=*circinatulum*), etc. There is a closer resemblance to *H. callichroum*, especially when sterile. According to the authors' observation, the main characteristics which separate this species from *callichroum* are the color of the plant (sometimes tinged with red), the leaves with shorter acumen and always colored with reddish-brown at the base, the larger and swelled capsule, and the far larger size of the spores (25～30μ in *dieckii*, 12～15μ in *callichroum*). This species is considerably variable in both color and size.

The distribution in Japan is shown in figure 1. The known localities are 64, in total, mostly in the northeastern half of Japan. The species is apparently less frequent or lacking in the southwestern regions. The feature of its vertical distribution is almost the same as in *subimponens*, except that this species reaches higher elevations the extreme being 2300 m on Mt. Ontake. It is noteworthy that this and the preceding species were both found at low elevations in the Izu Peninsula (*dieckii* in Doi-machi 100 m and Nishina-mura 400 m, *dieckii* and *subimponens* on Mt. Amagi 830–1200 m) and Ashu Enshurin (400～500 m) which are located in rather southern part of Japan, and a fact of further interest is that *H. dieckii* was found mostly in water in these localities, which suggests that the living of the plants is easier under such submerged habitat condition in the peripheral part of the range. The substratal feature was studied with respect to 52 specimens. The result is:

Rock	Soil	Decayed wood	Trunk-base
69.2%	19.2%	9.6%	2%

This species occurs most commonly on rock and is less frequent on other substrata. It seems to find better conditions for its growth in wet places and is occasionally found in shallow water. Five of the examined specimens were collected in water, and they exhibit a distinctly modified form, namely irregular and sparing ramification and laxer foliation. In N. America this species is distributed along the Pacific coast from Oregon to Alaska (including the Aleutian Is.). In Asia it is known at present only from Japan.

Specim. exam. Hokkaido. Nemuro: Mt. Rausu (ST-14430, 14449, 14453); Kitami: Mt. Shari (O-1346, A-2844, 2847, 2883); Tokachi: Mt. Petotoru (ST-10072), Mt. Tokachi (ST-4594), Mt. Rakko (ST-26336, 26356, 26362, 26380, 26386,
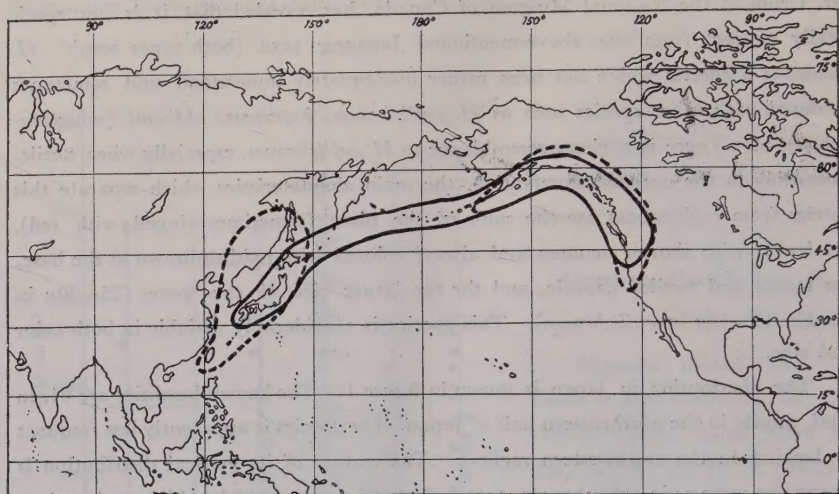
Fig. 3. Total range of *H. subimponens* (broken line) and *diekii* (unbroken line).

26430, 26455, 26461, 26472, 26477), Mt. Memuro (ST-15153, 15405); Ishikari: Aizan-kei (ST-23941, 23946, 23961), Biei-machi, Shirakane-onsen (ST-22399), Furano-machi (ST-12502), Upper part of the Nunobe river (ST-18304). N. E. Honshu. Aomori: Mt. Hakkoda (SZ-7180, T. Ozaki-I18608, 30983), Mt. Iwaki (O-3120); Iwate: Hachimantai (SZ-12135), Mt. Hayachine (A-14447, 14473, I-27975, 27976), Nishiiwai-gun, Itsukushi-mura (A-14571, 14583, 14654), Mt. Kurikoma (A. Yasuda-Herb. Nat. Sci. Mus. Tokyo, n. 2603, det. Broth. as *Brotherella pulchroalaris*); Yamagata: Mt. Funagata (K. Shyoji-I37410), Mt. Gassan (H-517), Mt. Asahi (SZ-15876, 15888). M. Honshu. Fukushima: Yama-gun, Mt. Jizo (A-14788), Mt. Azuma (SZ-16605), Iizaka-machi (H-2547), Mt. Bandai (W-1191), Shinobu-gun, Maku-onsen (W-1515), Yakeyama (H-1650), Mt. Hiuchi (A-8992, 9023, 9085), Prov. Iwashiro, sine loco designato ad terram (Hattori- type of *Stereodon pulchroalaris* in Herb. Broth. Helsinki Univ.); Tochigi: Mt. Nasu (W-993, 1503); Gumma: Oze (A-900), Tone-gun, Yomogi-toge (K. Yagi-I-32546), Mikuni-toge (I-34661), Tone-gun, Niiharu-mura (S. Imanari-A21732), Azuma-gun, Bog Nozori (K. Hisauchi-in Herb. Noguchi, det. Noguchi as *H. hamulosum*); Saitama: Chichibu, Kawa-

mata～Karisaka-toge (NG-4134, 4371); Niigata: Mt. Iburisashi (T. Ozaki-I22251), Mt. Iide (A-14877), Kitakanbara-gun, Mt. Nioji (I-42623, 42624), Rokujuri-goe (I-38376), Mt. Tanigawa (I-37923), Tsuchidaru (I-37573, 37624, 37664), Mt. Ogenta (I-18196), Minamiuonuma-gun, Hachimaki-toge (K. Yagi-I30974), Mt. Naeba (I-18268), Tsubame-onsen (K. Yano-1265), Mt. Myoko (K. Yano-880, det. Yano as *H. circinatulum*, O-4369, M. Iwasaki-Herb. Nat. Sci. Mus. Tokyo, n. 2021, labelled as *H. tristoviride*), Mt. Amakazari (K. Yano-198, det.Noguchi as *H. circinatulum*), O-4369, M. Iwasaki-Herb. Nat. Sci. Mus. Tokyo, n. 2021, labelled *H. tristoviride*, Mt. Amakazari (K. Yano-198, det. Noguchi as *H. circinatulum*), Etigo, Sanegawa (Tamaki-type of *Stereodon tamakii* in Herb. Broth. Helsinki Univ.), Sado, Totegawa (K. Homma-I-36958); Toyama: Mt. Tateyama (A-15699, 15738, 15786, E. Nokubo-A6629), Kurobe-kyo (T. Ozaki-I22401, I-38996, 39063, 39083, 39124, A-15910, 15915, K. Sinno-Herb. Nat. Sci. Mus. Tokyo, n. 2449, original specim. of *Brotherella fulvoaurea*); Nagano: Shimotakai-gun, Sakai-mura (S. Ito- in Herb. Hattori Bot. Lab., det. Okamura as *Stereodon amblyostegius*), Omachi (Y. Matsuda-A22227), Mt. Ontake (A-20012, 20022, I-8682); Shizuoka: Tagata-gun, Doi-machi (T. Haneda-I44991), Kamo-gun, Nishina-mura (T. Haneda-I44082), Mt. Amagi (A-8471); Gifu: Mt. Ontake (Y. Sasaki-A15271, 15275); Aichi: Mt. Dando (Toyama-1575). S. W. Honshu. Kyoto: Kitakuwada-gun, Ashu Enshurin (M. Mizutani-387); Nara: Mt. Sanjo (T. Nakanishi-A3622), Mt. Misen (NK-3000), Mt. Omine (NK-7529), Mt. Odaigahara (K. Saito-Herb. Nat. Sci. Mus. Tokyo, n. 2025, labelled as *H. tristoviride*). Kyushu. Kagoshima: Mt. Kirishima (T. Shin-8899).

Range. N. America (Oregon, Washington, British Columbia, Alaska), Japan (Hokkaido, Honshu, Kyushu).

Literatur cited: Brotherus V. F. 1919～'20. Musci novi japonici. Över. Finska Vet.-Soc. Förh. **62**: 1～55. Grout A. J. 1932. Moss Flora of North America III, **3**. Persson H. 1954. Mosses of Alaska-Yukon. The Bryologist **57**: 189～217.

摘　　要

Hypnum subimponens Lesq. と *H. dieckii* Ren. & Card. (蘚類) は従来北米の北部太平洋岸地域にのみ知られていたが，前者は日本 (北海道，本州，四国，九州) 及びその近接地域 (アムール，朝鮮，台湾) に，後者は日本 (北海道，本州，九州) にも産することがわかつた。両種共本州中部以北により多く生じ，主としてブナ帯～針葉樹林帯に分布する。なお Brotherus (1919～'20) により *Stereodon tamakii*, *S. pulchroalaris* として日本から記載された種はいずれも *H. dieckii* に一致する。

Harumi OCHI*: Contributions to the mosses of Bryaceae from Japan and its adjacent regions (10)

越智春美*: 日本およびその近接地域におけるカサゴケ科蘚類の研究 (10)

38) *Bryum capillare* and its allies. In (1845)[3] F. Dozy and J. H. Molkenboer reported *Bryum torquescens* from Japan; this is the first record on the member of the group being brought under discussion in this paper. Afterwards, the following species and varieties were recorded from Japan and the adjacent regions, respectively:

B. capillare Hedw. reported by W. Mitten (1864) from Nagasaki (Kyūshū) and Ningpo (China), by Y. Horikawa (1939) and by U. Mizushima (1957)[4] from Asakawa, Tokyo Pref.;

B. nagasakense Brotherus (1899) described from Nagasaki, and reported by Brotherus and G. Paris (1902) from Matsu and Mt. Tsurugisan (Shikoku);

B. (?) *taitumense* Cardot (1905) described from Taitum (Formosa);

B. nagasakense var. *laxifolium* Cardot (1909)[2] described from Mt. Ishizuchi (Shikoku);

B. tosanum Cardot (1909) described from Tosa (Shikoku);

B. capillare var. *rubrolimbatum* Brotherus (1910) described as species from Philippine;

B. torquescens Broth. reported by Y. Horikawa (1950) from Tottori (south-western Honshū);

B. capillare var. *flaccidum* Broth. et Schimp. reported by K. Sakurai (1953)[9] from Ozegahara (central Honshū) and

B. higoense Ochi (1956) described from Higo (Kyūshū) and Tosa.

In this paper, I am going to discuss on these 6 species, 3 varieties and a few related taxa.

B. capillare is one of the most widely distributed and very variable species, and it is very difficult to understand the concept of this species unless the world-wide revision of this group is carried out. Through courtesies of Mr. E. B. Bartram, Bushkill, Pike Co., Pa., U.S.A., Drs. H. Persson of Naturhistoriska Riksmuseum, Stockholm, H. A. Crum of National Museum of Canada, H. Roivainen of Botanical

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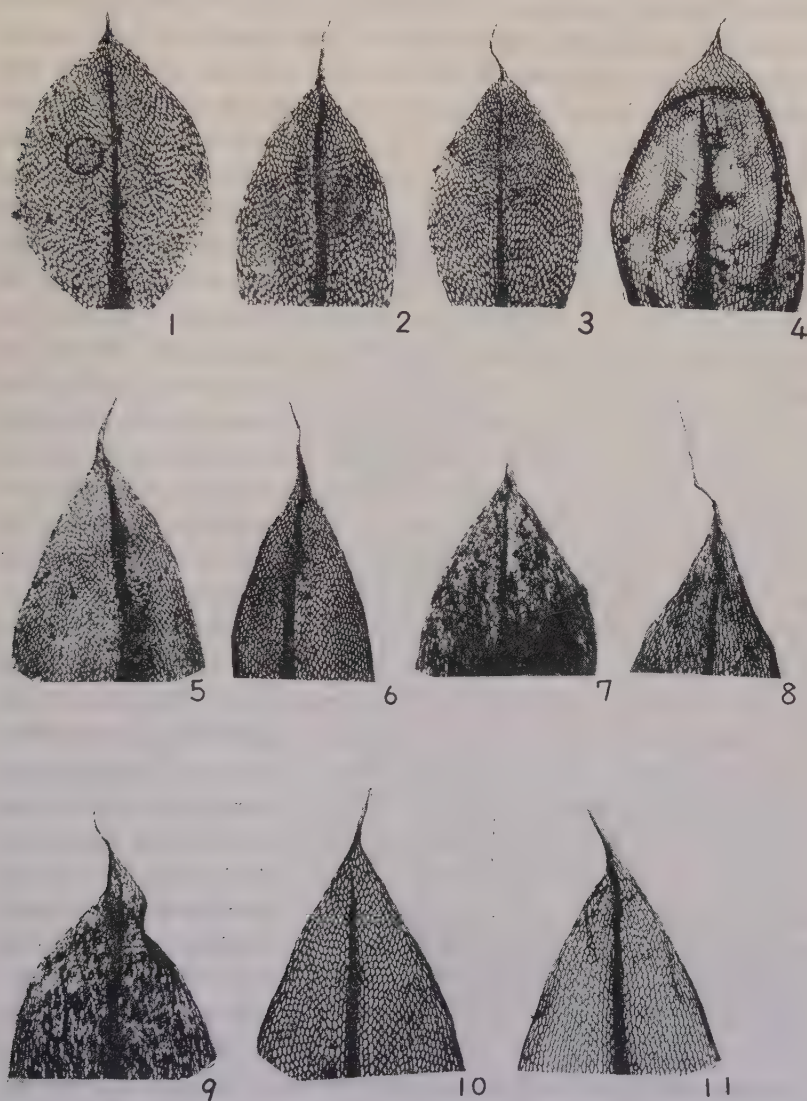
Fig. 1. Leaves of *B. capillare*: 1-3. Mt. Asahi, Yamagata Pref., ca. 1650 m, on rotten log (type 1); 4, Kamikochi, Nagano Pref., ca. 2100 m, on soil (transitional form), 5-6. Mt. Ishizuchi, Ehime Pref., ca. 1800 m, on rock (transitional form), 7-8. Mt. Akaishi, Pref. Nagano, ca. 3000 m, on soil (type 2), 9-11. Sweden; all ×ca. 100.

Museum, Helsinki University and D. P. Rogers of the New York Botanical Garden, I was able to examine some specimens cited in their papers and many material and specimens for comparison. I wish to express my great gratitude for their kindness. I was able to give the present paper by the following gentlemen who have helped me in making available the specimens and material for this study. I am very much indebted by them for their kindness: Professors Y. Horikawa and A. Noguchi, Drs. M. Tagawa, S. Hattori and N. Takaki, Mrs. U. Mizushima, Messers H. Suzuki, M. Saito, H. Ando, K. Mayebara, Z. Iwatsuki, Y. Ikegami, K. Oti, T. Nakajima, T. Higuchi, R. Watanabe, I. Nagano, S. Nakanishi, T. Osada, Ch. Igi and others.
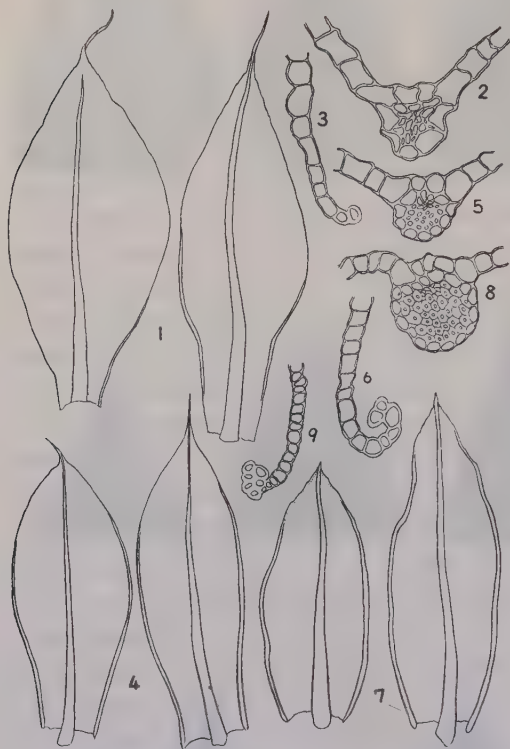
Fig. 2. Leaves (×13), cross-sections of the costal part of leaves (×125) and ditto of leaf-margines (×125) of *B. capillare* (from Mt. Akaishi, alt. ca. 3000 m, The Jap. South Alps, Central Honshu; 1-3), *B. capillare* var. *rubrolimbatum* (from the foot of Mt. Chokai, ca. 300 m, Yamagata Pref.,; 4-6) and *B. donianum* (from Dubrovnik; 7-9).

In 1954, I gave[7] a detailed description and illustration on *B. tosanum* and compared it with *B. capillare* and *B. nagasakense*. As described there, *B. tosanum* seems to be merely a modification of *B. nagasakense*. Where should, however, *B. nagasakense* stand in relation to *B. capillare*?

Before entering into the discussion of the relationship between *B. capillare* and *B. nagasakense*, *B. capillare* occuring in Japan must be properly understood. *Bryum capillare* is one of the Hedwigian species and the nomenclatural type is the description in Hedwig's Species Muscorum (1801). The important characteris-

tics of the gametophytes of the typical *capillare* are recognized as follows: leaves broadly oblong or broad-spatulate, acuminate, with capillary points, narrow-bordered, margins long-reflexed, entire or sometimes indistinctly serrulate in upper part, costa diminishing below apices, but sometimes excurrent entering into the capillary point, when dry leaves not deciduous, twisted, free or contorted around the stem. In Japan, there occur the following two types. **Type 1** of *B. capillare* distributes in cold places descending to the deciduous broad-leaved tree region: Plants sterile, leaves ovate, short acuminate, promptly narrowed towards the base; when dry twisted but not to the degree to coil around the stem and tending to be deciduous; when moist almost plane in leaf-margins, although sometimes revolute at most half way up to the whole length in the basal parts, serration distinct towards apices, border narrow and not thickened, costa not strong, usually diminishing below the apices, but sometimes excurrent entering into capillary tips especially in the upper leaves (fig. 1). The sterility is high in the plants from lower or warmer places such as *Fagus* zone and there the plants occur always on soil in shade and not on rocks, bark of trees, roofs etc. **Type 2** distributes in places colder or higher in altitude, compared with type 1, in coniferous to alpine zones of central Honshū. This one differs from the type 1 in the followings: plants sometimes fertile, more robust, leaves larger, the capillary tips of the leaves more prominent, serration more indistinct (figs. 1 and 2). It is of interest that the type 2 occurs on the rocks, bark of trees rotten logs, etc., and not on the soil. So far as I have concerned, the type 1 of *B. capillare* does not occur in northern Europe (through the courtesy of Dr. Persson and others I have examined more than 100 packets of specimens collected in Europe, but I have found none belonging to this type), and is presumably distributed in the cold-temperate zone of Japan and North America (I have recogned only one packet of this type collected in Africa, kept in herb. Bartram). On the other hand, the type 2 is very similar to the typical *capillare* occurring both in northern Europe and North America. Up to the present time I have examined 107 packets (of these only two are fertile) belonging to this species collected in Japan and Corea and recognized various transitional forms between the type 1 and 2. Accordingly, in spite of the fact that the type 1 seems fairly different from the typical *capillare* in habits when dry, leaf-shape and margins of leaves, two types occurring in Japan can not be separated as distinct taxa.

B. nagasakense (fig. 2) occurs on the rocks, roofs and bark of trees and not on the soil though it occurs sometimes on the soil in contact with rocks on which

the main part of the cushion of the moss often grows. In the colder places, this occurs always on rocks, especially on basic substratum such as limestone or concrete. At the northernmost station of this species, known at present i. e. the foot of Mt. Chōkai, Yamagata Pref., at alt. ca. 300 m, it occurs on volcanic rocks, but on which thin layers of cement are scattered here and there; and it is a very interesting fact that I have found none of this species growing on naked volcanic rocks in the neighbourhood. At one of the highest stations of this species, i. e. at alt. ca. 1100 m on Mt. Daisen, Tottori Pref., it occurs on the concrete base of a cottage. In the Todai limestone area, Nagano Pref. (I have never visited there), it occurs on limestone, at alt. ca. 1400 m. In such a high or northern habitat, where *B. capillare* (type 1) often occurs on the soil in shady places (fig. 3), I have never found transitional forms between *B. capillare* and *B. nagasakense*. Judging from these facts, I once inclined to separate specifically *B. nagasakense* from *B. capillare*. However, if we examine the specimens collected in Europe and North America, it is not difficult to find the form similar to *B. nagasakense*. In the specimens collected from western coast of North America (through the courtesy of Dr. Crum and others, I have examined more than 120 packets, of which 57 are from Vancouver Island), I have found five packets which are very close to the type 1 of Japanese *B. capillare*, two packets being similar to *B. nagasakense* and various transitional forms between *B. capillare* and *B. nagasakense*, although I have never found such transitional forms in Japan and Europe. It is unfortunate to state here that the data of the habitats are not described in detail on each packets of the North American specimens and that I cannot discuss on the sporophytes of Japanese *B. capillare* because they are usually sterile. But, considering these facts above mentioned, *B. nagasakense* can be seen to be included in the species category of *B. capillare*.

Judging from the habitat preference and the differences in the morphology especially when dry, recognized from many packets of specimens (I have examined about 440 packets of *B. nagasakense*) I have come finally to the conclusion that *S. nagasakense* is a stably fixed ecotype and that it is merely a variety under *B. capillare*. As mentioned above, however, it should be noted that the form similar. to the Japanese *nagasakense* also occurs in Europe and North America. I am not certain that any names have been given to such forms in these areas or not.

B. capillare cited by Mitten based on the specimens collected from Nagasaki and Ningpo is not presumed to be var. *capillare*, but *nagasakense*. The one

illustrated by Horikawa (1939) under the same name seems to be also *nagasakense*. Also *B.* (?) *taitumense* seems to be a form of *B. nagasakense*. As the non branching character of the stems is sometimes recognized in *B. nagasakense* from southern Japan and it is not difficult to find the transitional forms between the two, it must be reduced also to *nagasakense*. As I have never seen the type of *B. nagasakense* var. *laxifolium*, I can comment nothing on it now.

Finally, on examining the type specimen of *B. capillare* var. *rubrolimbatum*, I am convinced that this stands very near by *B. nagasakense*. We can find similar plants in Japan and, in addition, we can recognize the transitional forms between this and *B. nagasakense*. Therefore this one should be the same variety under *B. capillae*. Hence, under art. 66 of the International Code, var. *rubrolimbatum* must be adopted as a correct name for *B. nagasakense* under *B. capillare*.

B. donianum is a species standing closely to *B. capillare*. The thickened border of the leaves is an important character of *B. donianum*, but the grade in thickness is fairly variable and this thickness in *B. rubrolimbatum* seems to be intermediate between *B. capillare* and *B. donianum* (fig. 2) and, in addition, some transitional forms have been recognized between *B. rubrolimbatum* and *B. donianum*. In accord with these facts, it may be better to treat *B. donianum* as conspecific with *B. capillare*. But, unfortunately, I have examined but few specimens of *B. donianum* collected in Europe and Japan, I hesitate to give a definite opinion on this problem. I will provisionally treat *B. donianum* as an independent species in this paper.

B. torquescens is a synoicous form of this group. In Japan, I have discovered only one packet of material very similar to *B. rubrolimbatum* except for the sexual differentiation. The specimen cited by Horikawa (1950) is dioicous, and it is not *B. torquescens*, but seems to be *B. rubrolimbatum*. The specimens often dertermined to be *B. torquescens* are variable in forms, except for being synoicous and having more developed costa than var. *capillare*. As the unstableness of the sexual differentiation are often found in the other groups of mosses and the degree of costal development is a character not so important as to separate taxa specifically, I presume that forms determined as *B. torquescens* are derived from various forms of *B. capillare* such as var. *capillare*, *rubrolimbatum* and allied forms in Europe, North America and the other continents. For these reasons, the synoicous plants are presumably included in several taxa in respective areas, although I have not yet examined the specimen of *B. torquescens* cited by Dozy and Molkenboer (1845).[3]

As reduced by some authors to a synonymy of *B. capillare*, *B. elegans* stands also near to *B. capillare* and we can find similar plants also in Japan. So far as the results obtained from the observations of scanty Japanese material, however, it is difficult to distinguish these plants from *B. capillare* specifically. But as I have examined only a few material collected in Europe for comparison, I hesitate to discuss on the relationship of this one to *B. capillare* and provisionally I will include the Japanese material similar to *B. elegans* under *B. capillare* here.

I have not examined the specimen of *B. capillare* var. *flaccidum* cited by Sakurai (1953).[9] I have examined some specimens belonging to this variety collected in Europe and North America for comparison. In Japan, some of the type 1 of *B. capillare* are close to this variety and those occurring in very shady places represent the characters of this variety. Therefore I am going to refer them to this variety. And, in addition, I have recognized another type of plants to be refered to this variety: it occurs in shady lowland of southern Japan; and this type seems to have originated from var. *rubrolimbatum*, contrary to the former which seems to have originated from type 1 of *capillare*.

Would the following supposition be admitted for the explanation of the differentiation and distribution of *B. capillare* and its allies? *B. capillare* is presumed to be one of the "mixohydric" mosses and water economy plays perhaps the greatest role on it in relation to these problems. Possible origin of *B. capillare* has perhaps arisen in a district representing a fairly cold climate such as seen in the present subarctic zone, because this species is abundantly fruiting in the subarctic countries of Europe, Asia and North America or the high stations under similar climatic conditions. On the contrary, in warmer and lower places, it tends to be sterile. Judging from the works made by A. Noguchi and his co-workers (1956,[5] 1957),[6] deciduous character of the leaves recognized in the type 1 of *B. capillare* is supposed to be a representation of asexual reproduction. This type perhaps differentiated to adapt to too warm zone where no sexual reproduction is able to take place. And then, one of the most important characters of the type 1 having weak costae of the leaves is perhaps the representation that the plants keep their lives only in shady places. If the plants of this type were emigrated to sunny places in warm and dry climate, they would dry up in a short while because the weak costa cannot make pace with the rapid water loss by active transpiration. But, in higher or colder places as mentioned above, it can grow even on rocks in open places because the relative atmospheric humidity is supposed to be usually high

and, in addition, active transpiration hardly takes place there. The weak costa and long capillary tips of the leaves are perhaps the results of adaptation by which the plants are capable of absorbing atmospheric moisture (Ochi, 1957)[8]; and this tells us the possibility of transition from "mixohydric" to "ectohydric." *B. ele-*
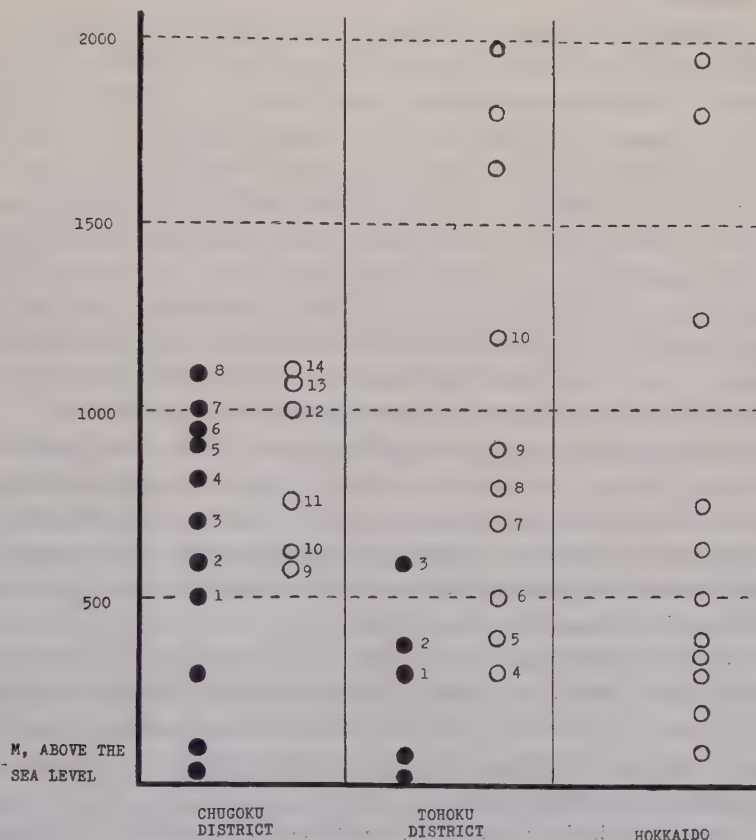
Fig. 3. Vertical distribution of *B. capillare* (circle) and *B. capillare* var. *rubrolimbatum* (solid circle): Chugoku district—1. Wakasa-machi, Tottori Pref., on roof, 2. Sandankyo, Hiroshima Pref., on rock, 3-6. Mt. Daisen, Tottori Pref., on rocks, 7. Mt. Hyonosen, Tottori Pref., on bark of tree, 8. Mt. Daisen, on concrete wall, 9. Wakasa-machi, on soil, 10. Sandankyo, on soil, 11. Wakasa-machi, on soil, 12. Mt. Daisen and Mt. Hyonosen, on soil, 13. Wakasa-machi, on soil, 14. Mt. Daisen, on soil. Tohoku district—1. Mt. Chokai, Yamagata Pref., on rock, 2. Okutadami, Fukushima Pref., on rock, 3. Mt. Otakine, Fukushima Pref., on limestone, 4. Ins. Kinkazan, Miyagi Pref., on soil, 5-6. Okutadami, on soil, 7-8. Mt. Chokai, on soil, 9-10. Ozegahara, Fukushima Pref., on soil.

gans seems to be more ectohydric than this type: densely tufted stems, closely arranged and very concave leaves should perhaps be refered to so-called "inter-organic capillary system" (interorganes Kapillarsystem, H. Buch, 1947),[1] and may be adaptive characters to more open and colder or higher habitats than those of *B. capillare*.

B. rubrolimbatum seems to be a race which has adapted to dry habitats in the warm-temperate zone and it is presumed to be closer to "endohydric" than var. *capillare*. Well developed costae and thick borders are perhaps an adaptation to such environments. *B. rubrolimbatum* is abundantly fruiting in the warm-temperate zone in Japan, contrary to *B. capillare* bearing fruit abundantly in the subarctic zone; and this fact seems to be of great interest. For the explanation of this fact, I propose a supposition as follows: In the glacial period, even the lowland of southern Japan was inhabited by typical *capillare* on various substrata. When it became gradually warmer, some of them differentiated to the forms resistant in warmer and dryer environments and finally fixed to the present *rubrolimbatum*. But var. *capillare* could not adapt to the warmer and dryer lowlands and remained only in colder or higher pleces in Japan as seen now.

Considering these, the type 2 of *capillare* in Japan is one of the residual elements and the type 1 is a derived form which has adapted to comparatively warm climate. *B. rubrolimbatum* also seems to be a residual elements differentiated in dry and warm environments. Similar differentiation has perhaps taken place in the other districts of the world as well; but I have not been able to examine so many foreign specimens as to discuss the problem.

B. higoense has perhaps been originated in *B. rubrolimbatum* and not directly in the typical *capillare*. At present, this species has very limited range and peculiar habitat: that is on obsolete charcoal kiln or allied places in southern Japan. This species may have differentiated only recently, and is presumed to be more endohydric than *B. rubrolimbatum*.

Would the following conclusion be an adventure? *B. capillare* has differentiated rather southward than northward because *B. capillare* has arisen in a district of fairly cold climate and the glacier seems to have played a great role in the differentiation.

Bryum capillare Hedw. Spec. Musc.: 182 (1801).

Japan—Hokkaidō: Provs. Kitami (including Is. Rebun and Is. Rishiri), Ishikari, Tokachi.

Honshū : Prefs. Akita, Yamagata, Miyagi, Fukushima, Gumma, Niigata, Nagano, Yamanashi, Shizuoka, Aichi, Ishikawa, Mie, Wakayama, Hyōgo, Tottori, Shimane and Hiroshima.

Shikoku : Prefs. Ehime and Tokushima.

Corea : Kang-Ouen-To, Tjang Tjyen, Mt. Diamond and Is. Quelpaert.

var. **flaccidum** Br. et Schimp. Bry. eur. IV fasc. 6/9 : 61 (1939).

Japan—Honshū : Prefs. Aomori, Saitama, Niigata (Is. Sado), Nagano, Shizuoka, Shiga, Kyōto and Hyōgo (Is. Awaji).

Kyūshū : Pref. Kumamoto.

var. **rubrolimbatum** (Broth.) Bartr. Philip. Journ. Sci. **68** : 142 (1939).

Bryum nagasakense Broth. Hedw. **38** : 219 (1899); Broth. et Paris. Bull. Herb. Boiss. 2 sér. Tom. **3** : 923 (1902); Amakawa and Osada, Journ. Hattori Bot. Lab. **17** : 48 (1956).

Bryum (?) *taitumense* Card. Beih. Bot. Centralb. **19** : 110 (1905).

Bryum tosanum Card. Bull. Soc. Bot. Genéve 2 sér. **1-3** : 128 (1909).

Bryum rubrolimbatum Broth. Philipp. Journ. Sci. **5** : 146 (1910).

"*Bryum capillare* Hedw." Mitten. Journ. Linn. Soc. Bot. **8** : 152 (1864).

"*Bryum capillare* L." Horikawa, in Asahina's Nippon Inka Shokubutsu Zukan : 907 (1939).

"*Bryum torquescens* Bry. eur." Horikawa, Hikobia **1** : 27 (1950).

Japan—Honshū : Prefs. Iwate, Yamagata, Miyagi, Fukushima, Tochigi, Gumma, Saitama, Tōkyō, Kanagawa, Niigata (incl. Is. Sado), Nagano, Yamanashi, Shizuoka, Ishikawa, Fukui, Mie, Kyōto, Nara, Osaka, Wakayama (Nakanishiki, June, 1905, no. 23, det. by Brotherus as *B. nagasakense*, in H*), Hyōgo, Tottori (Faurie, May, 1899, no. 697, det. by Brotherus as *B. nagasakense*, in H*), Shimane, Okayama, Hiroshima and Yamaguchi.

Shikoku : Prefs. Kagawa, Tokushima, Ehime (Nomura, May, 1954—H. O. 4206, synoicous form) and Kōchi (Okamura, July, 13, 1904, no. 88—isotype of *B. tosanum*, in NICH*).

Kyūshū : Prefs. Fukuoka (incl. Is. Tsushima), Oita, Nagasaki (Oldham, on moist rocks, in CAN*), Kumamoto, Miyazaki and Kagoshima.

Corea : Is. Quelpaert. New to Corea.

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* Herbarium abbreviations adopted in Lanjouw & Stafleu's Index Herbariorum Part 1 (3rd Ed.): 169-185 (1956).

Formosa: (Taitum (Faurie, May 7, 1903, no. 39—isotype of *B.* (?) *taitumense*, in KYO*) and Taihoku.

China: Ningpo, on city wall (Oldham, June, 1861, in NY*).

Philippines: Luzon, Benequet Prov., Pauai, ca. 2100m (R. C. McGregor, June, 1909, no. 8702—fragment of holotype of *B. rubrolibatum*, in herb. Bartram).

Bryum donianum Greb. Jonian. Crypt. Transact. Linn. Soc. **15**: 345 (1828).

Honshū: Pref. Hiroshima, Ryōke-mura, Kōnu-gun, ca. 350m, on soil (Suzuki, Feb., 1949, no. 4808—H. O. 1811).

Shikoku: Pref. Kōchi, Tsudai-mura, Hata-gun, on soil of cliff (Ando, May, 1953, no. 13064—H. O. 4100). New to Japan.

Bryum higoense Ochi, Journ. Jap. Bot. **31**: 362 (1956).

Honshū: Pref. Osaka, Chihayaguchi, Minami-kawachi-gun, ca. 300m, on bank of soil (Mizutani, Apr. 20, 1952, no. 2052—H. O. 6746). New to Honshū.

Shikoku: Pref. Kōchi.

Kyūshū: Pref. Kumamoto.

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38) ハリガネゴケとその近縁種

ハリガネゴケは最も広く分布する蘚類の一種で，変異にも富んでいるためか分類学上混乱を起しやすく，現在までに世界各地で多くの異名が与えられてきた。ハリガネゴケ属の如き大属の中にはこのような混乱を招きやすい種を含む群がいくつかあつて困らせられるのであるが，今回はそのような群の一つとしてハリガネゴケ群をとりあげた次第である。

先ず日本産ハリガネゴケの実態の把握が必要であるが，我が国には欧米の北部にみられるような典型的なハリガネゴケはみられない。本州中部の高山の高所などにみられる

ものは欧米北部のものにかなり近いものであるが，次第に低所又は暖地の大まかに言えばブナ帯にまで同系統とみられるものが下降している。高所では岩上，朽木上，樹皮上，土上などその基物の種類や育地の日当りに変化があるが低所では必ずやや陰所の土上に生じ，乾くと同時に葉がポロポロ落ち，――恐らく無性繁殖の一方法と思われる――不稔性を示すものである。

次に我が国で大まかには常緑濶葉樹帯を本拠としてナガサキハリガネゴケがみられる。このものはよく子囊をつけるが，前者がブナ帯まで下降すると必ず土上に生じるに反し，陽地の岩上，屋根上などに好んで生育している。時にはブナ帯にも生じることがあるが，その上限や北限附近では石灰岩やセメントなどの塩基性岩上に生じる。このような地点では附近の陰地の土上には上記のハリガネゴケが生じているが，それら二者の中間型ないし移行型はみられない。このような我が国における観察結果だけから考えると両者は区別してもよいように思われる。Mitten が長崎と支那の寧波からハリガネゴケとして報告したもの，堀川教授が日本隠花植物図鑑に書かれたハリガネゴケ，高知県産の標本に基いて立てられたトサハリガネゴケ，台湾台中産の不稔品に基いて立てられたタイツムハリガネゴケ，フィリッピン産の *B. capillare* var. *rubrolimbatum* などは皆ナガサキハリガネゴケにあてるべきものと思われる。ネジレハリガネゴケも僅か一点だけで出てきたが，その性分化以外はナガサキハリガネゴケと区別できないので，ここではやはり同一種に含めて考えたい。

ところで注意を要することは欧洲や北米にもナガサキハリガネゴケにごく近いものがみられることである。又日本や北欧には未だハリガネゴケとナガサキハリガネゴケとの中間型はみられないが，北米西海岸には我が国のブナ帯にみられる型のハリガネゴケ，ナガサキハリガネゴケに近いもの，ハリガネゴケとナガサキハリガネゴケとの中間型などがみられる。このようなことから考えて，結局ハリガネゴケとは同一種とみるべきものであろうと思うようになつた。

しかしながら両者は育地からみても形態的にも上述の様な差があるのでナガサキハリガネゴケが暖地の岩上や屋根上樹皮上などに適応するように分化して固定したものという意味で変種としての階差を設けて区別することにしたい。この場合 *B. capillare* の変種としては var. *rubrolimbatum* が最も早い変種名であるのでナガサキハリガネゴケの学名としてはこれを採用することとなる。ナガサキハリガネゴケの分化は次のように説明すると好都合なのではあるまいか。すなわち“氷河時代には日本の現在の常緑濶葉樹帯にあたるところも北方から入つてきたハリガネゴケの基本種が分布していた。しかしそこがだんだん暖くなつてきたときそこの陽地の岩上などに適するものが分化してきて，それが結局ナガサキハリガネゴケになつた。一方あまり分化できなかつたハリガネゴケの基本種は暖地に適応できずに絶えてしまつて寒地や高所にのみ残つた。そのうちやや暖地におそらく無性繁殖をして残り得るように分化したものが現在のブナ帯にみら

れる型のものではなかろうか”と。

桜井博士の発表されたコモチハリガネゴケはみていないが var. *flaccidum* にあたるものは我が国にもみられる。ハリガネゴケの基本種から変つたとみられるべきものとナガサキハリガネゴケから変つてきたとみられるものとがある。

南欧にみられる *B. donianum* にあたるものが我が国にもみられる。葉縁が厚く分化しているのが特徴であるから**アツベリマゴケ**の新称を付したい。これも暖地の乾燥地にみられる型と思われナガサキハリガネゴケとの間に中間型があるようである。しかし比較標本として欧洲産のものを僅か4点しかみていないし，ここで断定的なことをのべるのをさけて一応独立種として扱つておきたい。

ハリガネゴケよりも更に北方ないし高所に適応した型と思われるものが *B. elegans* である。我が国の高山にもそれに近いと見るべきものが若干出現している。しかし *B. elegans* の特徴である密に集つて束をなす植物体，著しく concave な葉などは程度の問題で，少くとも上記日本産のものはハリガネゴケから特に区別すべきものとも思えないので，前者に含めて取扱うことにしたい。

ヒゴハリガネゴケはナガサキハリガネゴケから分化したとみるべきものであろう。その特異な育地や分布域から考えるとごく新しい種と言えるのではなかろうか。やはり暖地の乾燥した育地に適した型と言うべきであろう。

結局我が国産のハリガネゴケ群はハリガネゴケ，アツベリマゴケ，ヒゴハリガネゴケの3種とコモチハリガネゴケおよびナガサキハリガネゴケの2変種とに整理するのが適当であろう。

□ 柴田桂太編：**資源植物事典（増補改訂版）** Keita Shibata : A cyclopedia of useful plants and plant products (Enlarged and revised edition)

本書の第一版が出てから既に8年の歳月が流れようとしている。当時資源科学研究所の植物関係の人達が大きな野望を持つてまとめ上げた作品も，其頃の製本材料の不充分さと挿図にあまり凝りすぎて懐古趣味のきらいがあつたことは否めなかつた。また地球上の天然資源は其頃も今もあまり変りはないが，これを利用する途はこの数年間に多方面に開拓された。これらの問題を考慮に入れて新装成つたのが今回の改訂版である。植物名索引のほかに新たに事項名索引120頁分も追加された。一番目立つのは多数のアート刷図版である。我国の重要な或は特殊な天然資源でありながら，あまり類のもののない写真図版を多数揃えている。科学的であることは云ふまでもないが詩味が溢れているのが嬉しい。印刷は半七で悪かろう筈もない。図版の説明だけでも横文字がほしいと思つた。発行所　北隆館　昭和32年5月25日発行　定価2,500円　（小林）。

Masami MIZUSHIMA**: **Notes on *Stellaria* in E. Asia (Critical studies on Japanese plants 4)***

水 島 正 美**: 東亜産ハコベ属の記 (日本植物寸評 4)

§ In eastern Asia, 6 species have been described in *Stellaria* subgen. Schizothecium Fenzl, viz. *S. monosperma* Hamilton, *S. crispata* Wallich, *S. paniculata* Edgeworth and *S. glandulifera* Klotzsch from Himalayas, *S. paniculigera* Makino from Japan, and *S. drymarioides* Thwaites from Ceylon. Exception the Ceylon plant which may be an independent species, the rest resembles each other. Edgeworth & Hooker fil. recognized *S. paniculata* and *S. crispata*, and reduced *S. monosperma* to a synonym of the latter, but Maximowicz reduced *S. crispata* and *S. paniculata* to *S. monosperma*. *S. glandulifera* has been neglected owing, presumably, to its interconnecting character between *S. crispata* and *S. paniculata* or for some other reasons. From these treatments, the close affinity of Himalayan plants might easily be perceivable. Besides, Edgeworth & Hooker fil. pointed out that Schizothecium (erroneously cited as 'Schizothegium' in Fl. Brit. Ind. **1**: 229, 1874) has 3-celled ovary by which the group differs largely from any other sections of the genus, and this statement led Makino to abandon Maximowicx's *S. monosperma* var. *japonica* and to describe *S. paniculigera* from Japan. To make clear the relationship between these species and the structure of the ovary, I undertook the re-examination and the result obtained is as follows.

So far as I could ascertain upon Afghan and Himalayan specimens, all dissected are unilocular in the adult stage. Three septa in the ovary may present, I guess, in a very young stage. Though I have not yet the chance to examine authentic specimens used for the preparation of Hooker's Flora of British India, here I dare to propose to omit the diagnostic character "ovary 3-celled" from the description of subgen. Schizothecium.

Judging from the description of *S. crispata* and *S. monosperma*, I agree with the old authors' verdict in uniting the two. *S. glandulifera* was nicely illustrated in Klotzsch und Garcke, Die Botanischen Ergebnisse der Reise des Prinzen Waldemar von Preussen t. 28, (1862), and it is doubtlessly close in appearance to *S. crispata* in sessile leaves but differs in petals shorter than the sepal. According to

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Edgeworth & Hooker fil., petals are as long or twice as long as the sepal in *S. crispata* (=*S. monosperma*), while in *S. paniculata* they are shorter than the sepal. Thus *S. glandulifera* stands intermediately between *S. crispata* and *S. paniculata* in having sessile leaves of the former and petals surpassed by the calyx of the latter. In specimens having sessile leaves and labelled as *S. crispata* which I examined, corollas are shorter than calyces, but when an ample material is available, long petals may be observable. Comparing flowers of *S. crispata* with those of *S. paniculata*, sepals are 4–5 mm long and acuminate to acute at the apex in bloom in the former, and are 2–3, rarely 4–5 mm long and acute to obtuse in the latter. Moreover, it is interesting and important that the smaller the calyces are, the more slender but not always shorter in relative length the androecia become. This tendency is understood as denoting the gynodioecism. The following facts might be the proof. Anthers of larger flowers (in *S. crispata* and rarely in *S. paniculata*) are about 1/3 mm across and have globose pollen grains against smaller anthers 1/4 mm across or less and smaller pollen grains not a perfect globe of smaller flowers (in *S. paniculata*). Both flowers well produce capsules containing one seed closely enveloped by membranous pericarps. Seeds are globose, chesnut-brown, slightly wrinkled or granulate, about 3 mm across, and they seem to be fertile in both types in my examination. Thus the larger and smaller flowers can be considered as representing hermaphrodite and female flowers respectively as is well known in *S. graminea* L. Judging from the illustration (Klotzsch u. Garcke, op. cit.), *S. glandulifera* appears to be the hermaphrodite type. The presence or absence of the petiole is not an essential difference because of the variableness of their length connecting *S. crispata* and *S. paniculata*. In *S. crispata* lower leaves have sometimes short petioles 1–3 mm long but in *S. paniculata* they attain to 10 mm long. The shape of petals varies considerably especially in the depth of cutting and the length of claw (Fig. 1). All ovaries or capsules of *S. crispata* and *S. paniculata* contain 3 ovules or 1 seed and 2 undeveloped ovules. Fig. d of t. 28 (Klotzsch u. Garcke, op. cit.) represents 3 ovules in an ovary. Basing upon these facts mentioned above, *S. crispata*, *S. monosperma*, *S. glandulifera*, and *S. paniculata* are considered to form a single species to which the oldest and legitimately published name, *Stellaria monosperma* Hamilton ex D. Don, should be applied. It is conveninet to recognize *S. paniculata* with distinct petioles and mostly female flowers as forma *paniculata* (Edgew.) m.

Makino distinguished Japanese *S. paniculigera* from the Himalayan plant on

the basis that "this species (*S. paniculigera*) comes very near to *S. crispata* (=*S. monosperma* Buch.-Ham.; *S. paniculata* Edgew.), but my species has 2-lined-pubescent stem, acuminate sepals, 5-stamens, longer styles and 1-celled ovary." All these characteristics are common to Japanese and Himalayan plants except for 5 stamens. A Japanese plant, *S. paniculigera*, has always 5 stamens of the outer whorl. The lined-pubescence on stems are not always 2, and oppositely the Himalayan *S. monosperma* has often 2-lined-pubescence. When stems have 2 lines of hairs, one of the two is always faint in both populations. Sepals are acuminate to obtuse at the tip in the Himalayan population but always acuminate in the Japanese one. Here I add, however, two slight differences between these plants not mentioned by Makino. Firstly, although the shape of petals is very variable in the Himalayan plant, the lobes are almost always shorter and broader than the Japanese one and have a rounded to obtuse tip and sinus. Those of the Japanese plant are more deeply cleft, somewhat falcate, often acute at the tip and sinus, but petals of this shape are rarely met with in the Himalayan plant. Secondly, the pubescence of leaves is often thinner in the Japanese plant than the Himalayan. Thus all the differences counted between *S. paniculigera* and *S. monosperma* are scarcely workable in separating them specifically, and accordingly it is better to consider *S. paniculigera* Mak. as a geographical variety of *S. monosperma* Ham. as Maximowicz did at first.

When Makino published his species in 1909, he did not indicate neither the precise type locality nor the type specimen. In the Herbarium of University of Tokyo (TI), a specimen bearing the label with Makino's handwriting "*Stellaria paniculigera* Makino, sp. nov." The specimen was collected by G. Nakahara on Aug. 16, 1904 at "Hinoimata, Aidsu," and it matches with Makino's original description. Therefore I selected it as the lecto-type specimen of *S. paniculigera* Mak. under the present International Code of Botanical Nomenclature.

A specimen from Yunnan, China (Henry, no. 13562) is quite alike to f. *paniculata* (Edgew.), but is hispid on stems and leaves. Hispid hairs consist of more or less 4 cells including one basal cell, and they are deciduous leaving hardened and elevated basal cells by which the leaves are scabrous especially on the margin and the upper surface. Flowers are female and have only 5 stamens of the outer whorl as in the Japanese race, but petals are similar to the Himalayan race. Ovules are 3 in an ovary and the capsule contains 1 seed and 2 undeveloped ovules. Although the taxonomic position of this plant is doubtlessly in Schizo-

thecium, I could not find any known taxa comparable with this form other than the species in discussion. Hence I name it expediently forma *scabrifolia* m. under *S. monosperma* var. *monosperma*.

Stellaria monosperma Buchanan-Hamilton ex D. Don, Prodr. Fl. Nep. 215 (1825).

var. **monosperma.**

S. crispata Wallich [Cat. no. 633] ex Edgeworth et Hooker fil. in Hooker fil., Fl. Ind. **1**: 229 (1874).

S. glandulifera Klotzsch in Klotzsch u. Garcke, Bot. Ergebn. Reise Prinz. Waldemar: 141, t. 28 (1862).

Foliis supra pubescentibus deinde decalvatis vel ab initio glabris. Sepalis acuminatis ad obtusis; petalis latioribus lobis sinibusque saepe rotundatis obtusisve; staminibus saepe 10.

f. **monosperma.**

Foliis sessilibus vel cum petiolulis plus minusve 2 mm longis subsessilibus; laminis saepe lineari-oblongis vel oblanceolatis, apice elongato acuminatis, basi rotundatis cordatisve, margine saepe glabris et laevibus, infra medium vel non raro supra medium latissimis. Floribus saepe hermaphroditis majoribusque.
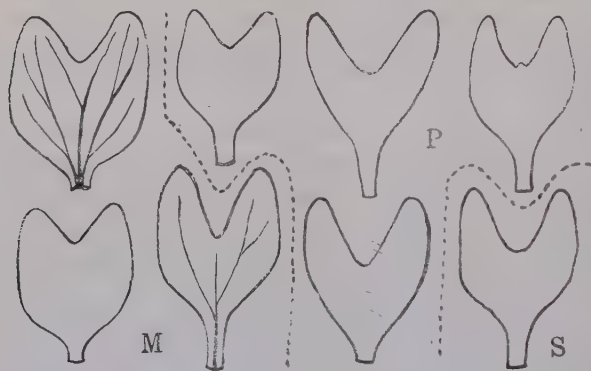
Fig. 1. Variation of petals, veins mostly omitted. M: f. *monosperma*. P: f. *paniculata*. S: f. *scabrifolia* All ×6.5.

Hab. India: Nongtri (?), 4500 ft., Khasia (Nov. 3, 1872, C. B. Clarke, no. 18699 C, US no. 681915); Keran, Kishenganga Valley, 5-6000 ft., in forest, W. Kashmir (July 18, 1939, R. R. & L. D. Stewart, no. 17628, US no. 1942162).

Afghanistan: Trokikhorl to Chatrass, Nuristan (Aug. 1, 1955, S. Kitamura, Kyoto Univ.)—leaves sessile but the base of blades obtuse, flowers smaller and female; Chatrass, Nuristan (Aug. 2, 1955, S. Kitamura, Kyoto Univ.).

f. **paniculata** (Edgew.) Mizushima, stat, nov.

S. paniculata Edgeworth in Trans. Linn. Soc. Bot. **20**: 35 (1846)—Edgew. et Hook. fil. l. c. (1874).

Foliis distinctissime petiolatis; laminorum forma vario, oblongo-lanceolatis ad ellipticis, apice saepe longe acuminatis, basi in petiolum attenuatis, margine saepe glabris laevibusque, circa medium latissimis. Floribus saepe femineis minoribusque.

Hab. India: Khupiong (?), 7000 ft., Sikkim (Sept. 28, 1884, C. B. Clarke, no. 35995 A, US no. 803286); Darjeeling (Aug. 28, 1869, C. B. Clarke, no. 8877 A. US no. 484347); Jabberkhet, Landour, 7000 ft., Mussourie (Aug. 19, 1937, R. R. Stewart, no. 16043, US no. 1942022); Nag Tebba, Tehri near Mussoorie, 7-8000 ft., Garhwal (Sept. 2, 1944, R. R. Stewart, no. 21278, US no. 1994927); Simla (Sept. 1884 ex Herb. J. R. Drummond, no. 1077, US); Nandukital, Kulu, Punjab, cliff face in fir forest, 10000 ft. (Oct. 3, 1930, W. Koelz, no. 1444, US no. 1595939).

Indochina: near Chapa, 1700 m (Oct. 1933, no. 4761, US no. 1719713)—flowers larger and hermaphrodite.

f. **scabrifolia** Mizushima, f. nov.

Habitu f. *paniculatae* simile, sed caulis foliisque pilis deciduis itaque caule subbifariam foliis supra margineque scabris cum cellulis induratis. Floribus femineis videnture et staminibus 5.

Hab. China: Szemao, Yunnan (A. Henry, no. 13562, US no. 459633)—holotype.

var. **japonica** Maximowicx in Bull. Acad. St.-Pét. **18**: 384 (1873)—Yatabe. Nippon-shokubutsu-hen 221, fig. 229 (1900)—Matsumura, Ind. Pl. Jap. **2** (2): 90 (1912).

'*S. monosperma* Ham.': Matsum., Cat. Pl. Herb. Imp. Univ. 23 (1886).

S. paniculigera Makino in Bot. Mag. Tokyo **23**: 145 (1909)—Ohwi, Fl. Jap. 499 (1953)—Honda, Nom. Pl. Jap. rev. ed. 70 (1957)—e typo.

Planta f. *paniculatae* valde affinis. Foliis petiolatis, ex toto subnudis vel praesertim supra minute pubescentibus mox glabrescentibus, basi in petiolum attenuatis, apice acuminatis. Sepalis fere semper acuminatis lanceolatis: petalis angustioribus, lobis subfalcatis apice acutis, sinibus acutis obtusisve; staminibus saepissime 5.

Hab. Japan: Kyushu; Shikoku; Honshu (northeastwards to prov. Rikuchu in the Pacific side & prov. Echizen in Japan Sea side).

Distr. sp.: N. E. Afghanistan; Himalayas in India; S. W. China; Indochina; Japan.

§ In the Larbreae group of *Stellaria*, there is a well marked species, *S. saxatilis* Hamilton ex D. Don, 1825, covered with a dense stellate-tomentum on stems, leaves and calyces especially when young. Merrill described in 1905 *S. laxa* from Luzon in the Philippines without any statement on its relationship, and Hayata distinguished in 1908 *S. stellato-pilosa* from *S. saxatilis* by its lanceolate leaves and entirely separate sepals. Three years later, Hayata himself remarked that *S. stellato-pilosa* comes near to *S. saxatilis* from which it is hardly distinguishable, but he did not unite them. In his Enum. Philipp. Pl. **2**: 138 (1923), Merrill demonstrated his verdict upon the examination of Formosan plant (Faurie, nos. 541 and 1385) that Hayata's species can not be distinguished from *S. laxa*. Since then the name *S. laxa* has been applied by the authors of the flora of Formosa for *S. stellato-pilosa* Hay. which is "hardly distinguishable from *S. saxatilis*" of continental southeastern Asia.

Re-examining these three plants, I am of belief that neither of them are independent species nor represent geographical races but they form together a well-marked species, *S. saxatilis* Ham., for the following reasons. In the differences which Hayata laid much stress, the shape of leaves is not workable because of their variableness from ovate, ovate-lanceolate to lanceolate. The base of blade is rounded in general and not rarely cordate or obtuse, and is from sessile to bearing faint petioles of 0.5 mm long. In the specimens examined, the two Chinese ones have blades obtuse at the base with longer petioles 1–2 mm long. This form was collected in Hupeh and Sxech'uan, but at present it may be better to consider it as occasional individuals deserving at most the rank of forma (f. *petiolata* m., f. nov.) rather than a geographical variety. The leaf-tip is acuminate to acute. Although Hayata emphasized that leaves are lanceolate and narrower than those of *S. saxatilis*, his fig. 2 of pl. II in Flora Montana Formosae (1908) represents a rather ovate leaf shallowly cordate at the base and acute at the tip. Fig 1 of the same plate shows a part of the fruiting specimen having lanceolate to oblong-lanceolate leaves. Above all, the shape and size of the leaf as well as the density of stellate tomentum on adult parts are variable by individuals in the populations of Formosa and of the continent. Secondly, the degree of fusion of the base of sepals is also variable to a certain extent. As one of the key character of the Larbreae group, the character that sepals are more or less coherent into an obconic tube has been used. But it does not seem to rule all the species of the group, and those taxa under consideration are just the case. So far as the specimens that

I examined are concerned, sepals are free to the base at least in bloom except for a few specimens. In specimens with ripe capsules, some calyces are incrassate at the base, although the phenomenon is a matter of individual variation. Then the entirely free sepals which Hayata emphasized do not merit a distinguishing point. Capsules are described as 4 mm long in *S. stellato-pilosa* while it is about 5 mm long in *S. laxa*. This difference belongs actually to the individal variation of both plants, and it is included in the range of variation in the continental *S. saxatilis*. In these three taxa, the number of seeds in a capsule varies also from 5 to 12, and the number 5 to 6 represented in the original description of *S. laxa* is included in the variation. Seeds are described as 1 mm in diameter in *S. stellato-pilosa* and 1.5 to 1.8 mm long in *S. laxa*. According to the measurement on the specimens I examined, it ranges from 1 to 1.5 mm across or long by a slight modification of the shape of seeds. Most of seeds measured are, however, less than 1.5 mm across and none attained to 1.8 mm. Thus the treatment by Merrill that Formosan *S. stellato-pilosa* Hay. is the same as Philippine *S. laxa* was right except for the discrepancy between the actual size of seeds and that of the original description of *S. laxa*, yet it should be better to reduce them to the synonyms of the oldest name, *S. saxatilis* Hamilton.

Hayata cited two specimens under the original description of *S. stellato-pilosa*, viz. S. Nagasawa no. 622 and T. Kawakami & U. Mori no. 2258, without indicating the holotype specimen. Judging from pl. II in Hayata, op. cit. (1908), figs. 1 to 12 can most probably be drawn from no. 2258 except for at least fig. 2 which may be from no. 622. Accordingly the specimen no. 2258 kept in the Herbarium of the University of Tokyo (TI) can be selected as the lectotype specimen of Hayata's species.

Stellaria saxatilis Buchanan.Hamilton [in Wallich, Cat. no. 634] ex D. Don, Prodr. Fl. Nep. 215 (1825)—Miquel, Fl. Ind. Bat. **1** (1): 1054 (1855)—Edgeworth et Hooker fil. in Hooker fil., Fl. Brit. Ind. **1**: 232 (1874)—Franchet, Pl. Delav. **2**: 98 (1889)—Koorders, Exkurs.-fl. Java **2**: 211 (1912)—Handel-Mazzetti, Symb. Sin. Anthoph. **1**: 190 (1929)—Mizushima in Kihara, Fauna & Fl. Nep. Himal. **1**: 124 (1955).

S. laxa (non F. Behm. 1887) Merrill in Philipp. Gov. Lab. Bur. Bull. **29**: 12 (1905); Enum. Philipp. **2**: 138 (1923)—T. Suzuki in Masamune, Short Fl. Form. 62 (1936).

S. stellato-pilosa Hayata, Fl. Mont. Form. 58, pl. II (1908); Mater. Fl. Form.

37 (1911); Ic. Pl. Form. **1**: 71 (1911)—Makino et Nemoto, Fl. Jap. ed. 2, 302 (1931) —e type.

Hab. Formosa: Mt. Morrison (=Niitaka), 12000 ft. (Oct. 20, 1906, T. Kawakami & U. Mori, no. 2258, TI*)—lectotype of S. stellato-pilosa; top of Mt. Morrison, 13094 ft. (Nov. 3, 1905, S. Nagasawa, no. 622, TI); Oiwake on open ground, 7500 ft. (Apr. 20, 1911, B. Hayata, TI); Mt. Tancho (Aug. 5, 1918, Takahashi, TI); Mt. Morrison (Aug. 30, 1927, S. Suzuki, KAG); Onoë (Aug. 3, 1926, S. Suzuki, no. 121, KAG); Mt. Niitaka, 9000 ft. (Oct. 10, 1927, R. Kanehira & S. Sasaki, no. 21829, UC no. 344427 and UC no. 1372624); between Sekigahara and Gôkwan, prov. Kwarenkô (Sept. 10, 1934, M. Tagawa, no. 859, TI); Sekizan in Mt. Morrison, 2500 m, in meadow on sunny slope (Dec. 1936, K. Moriya. no. 2148, TI).

Philippines; Mt. Baudan, Benguet subprov., Luson (Sept. 1921, M. Ramos & G. Edano, no. 40321, UC no. 239100).

China: in wet place, Hsien Shan Hsien, 960 m, W. Hupeh (Sept. 17, 1926, Y. Chen, no. 15049, UC no. 343590)—f. petiolata Mizushima, f. nov. foliis cum petiolulis 1-2 mm longis subpetiolatis a type differt; copious in Mt. Daliang-schan near Tjiaodjio, 2200-2600 m, S. W. Szech'uan (Apr. 24, 1914, H. F. Handel-Mazzetti, no. 1622, US no. 1529630); roadside, Kuan Hsien, 3000-3600 ft., Szech'uan (July 9, 1928, W. P. Fang, no. 2104, US no. 1525289); roadside, Mowchow Mow Hsien, Szech'uan (Sept. 25, 1928, W. P. Fang, no. 5527, US no. 1525288)—f. petiolata Mizush.; roadside in plain and in Hsi-shan, 1900-2200 m, Yunnan-fu. Yunnan (May 4, 1916, O. Schoch, no. 87, US no. 1235281); on dry calcareous hill near Tong-tchouan 2900 m, Yunnan (E. E. Maire, no. 3759, US no. 388854).

Indochina: Doi Angka, Siam (July 16, 1922, A. F. G. Kerr, no. 6297, UC no. 237067); on siliceous bank of torrent near Chapa, 1200 m, Tonkin (Apr. 1936, no. 5715, US no. 1717102); without precise locality (1921-22, B. Hayata, TI).

India; Marphlang, 6000 ft., Khasia (June 12, 1885, C. B. Clarke, no. 38259 D, US no. 803413).

Distr.: Himalayas from Nepal to Khasia and Bhutan; Yunnan, Szuch'uan, Hupeh in China; Indochina; Java; Philippines; Formosa.

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* Herbarium abbreviations:
US—United States National Herbarium, Washington, D. C., U. S. A.
UC—The Herbarium of the University of California, Berkeley California, U. S. A.
TI—The Herbarium of the University of Tokyo, Tokyo, Japan.
KAG—The Herbarium of Kagoshima University, Kagoshima, Kyushu, Japan.

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J. D. Hooker の Flora of British India **1**: 229 (1874) に Schizothecium 亜属 (同書には節として) の最大特徴として子房3室を挙げ，之によりハコベ属の他群とは大に異るとの意見が察せられる。又，牧野博士はオオヤマハコベを記載するに当り，インドの *Stellaria monosperma* Buch.-Ham. に似るが子房1室なるを異れりとされた。筆者は以前から此の点に疑問を抱き解決の折を待つていたが，今回材料を得て検討を加えることが出来た。結果は予想通りで，少くとも成熟した子房は完全に1室で隔壁の痕跡すらないものであつた。開花には遠い蕾を解剖しても全くの1室としか見えない。Hooker の書のナデシコ科は Edgeworth との共同であるが，筆者は其の権威に抗して，Schizothecium の特徴から「子房3室」を断然除外する。すると残るのは「心皮3，胚珠(卵子)3内外，種子1稀に2」というだけになる。尚今回扱つた種類はヒマラヤから記載された4種と邦産のオオヤマハコベとであるが，此の類には雌花異株(雌性2家)の性があるものと見られ，両性花の個体群と雌花の個体群とに夫々別名を設けていたことになる。此の性質は既にカラフトホソバハコベ (*S. graminea* L.) で顕著であり，便宜上両方の形に品種の級位を与えて区別してもいる。ヒマラヤ産のものも之に倣い，両性花を着けて無柄葉の傾向ある方を f. *monosperma* とし，雌花を着けて有柄葉の傾向ある方 f. *paniculata* とする。後者に似て茎葉に硬尖毛を生ずるものが支那大陸雲南省にあり (Henry 13562)，之を f. *scabrifolia* と命名する。オオヤマハコベは5雄蕊，花弁の裂片が少し鎌形に曲り鋭頭をなす点以外は f. *paniculata* に酷似する。故に地方的変種と見るを至当と考える。

台湾のナガサワハコベは全株殊に若い部分に密に星毛を布くので著しいが，Merrill は之をフィリッピンの *Stellaria laxa* に同じとした。然し彼は大陸側の *S. saxtilis* Buch.-Ham. を知らなかつたと想像出来る節があり，之等3者の関係を明確にする必要を感じていた。所が比較検討の結果，全く同一種に属し *S. saxatilis* の名を以て呼ぶべきものとの結論に達した。Merrill は *S. laxa* の発表に際し何等の記相的ノートを附けず，早田博士が挙げられた特徴は全くナガサワハコベ特有のものではない。唯 *S. laxa* は種子が1 5〜1.8 mm 長と記されたが，測つた値は3者共に径 1.5 mm 以下が多くて最大が 1.5 mm であつた。此の点は *S. laxa* の原標本 (Elmer 6612) に当ればよく分ると思うが，目下其の所在を掴めずにいる。然し上記の如く他の点では差を見出し難いので，*S. laxa* とナガサワハコベとを *S. saxatilis* の異名に下した方が良いと思う。

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菊地政雄*・小山鉄夫**: **ホタルヰ属の一雑種**

Masao KIKUCHI & Tetsuo KOYAMA: A new natural hybrid of *Scirpus* Sect. Taphrogeton from Japan

1956年10月末筆者の一人(菊地)は盛岡市外厨川の湿地でアブラガヤ節 Taphrogeton の一種を採集したが，この植物は外形特に花序の形態がアブラガヤ *Scirpus Wichurai* Böcklr. とコマツカサススキ *Scirpus fuirenoides* Maxim. との中間を示すのみならず，産地ではこれ等三者が混生の状態であるので，間違ひなくコマツカサススキとアブラガヤとの自然交配種であると判断出来る。更に筆者の一人(小山)は鹿児島大学所蔵の標本中に在る肥後産の一枚を矢張りこの雑種と認めているが，盛岡産のものと肥後産のものとは互に形態は極めて良く一致し，共に痩果は不完全の状態である。始めてのものであるのでこの雑種をコマツカサアブラガヤ(新称)と呼ぶ事にし度い。

アブラガヤ節ではカヤツリグサ科の他属と違つて，小穂の鱗片の形や大きさと痩果の諸形質とは種を識別するに足りないので，種類の区別は殆んど鱗片の質と色，それに小穂の形と大きさそれにその排列様式，更には一部の栄養器官の形質に頼つている。従つてコマツカサアブラガヤは両親と次に示す様な差異が認められる。

コマツカサススキ	コマツカサアブラガヤ	アブラガヤ
(小穂) 帯灰色で球状に集まり，穂体は長さ 5-7 mm 径 3 mm 許。	赤褐色を呈し十数箇不規則に集まり，穂体は長さ 6-9 mm 径 3-4 mm	赤褐色を呈し，繖梗の頂部に 1-3(-4) 箇集まる。穂体は長さ 4-8 mm 径 3-4 mm
(分花序の枝) 平滑。	糙渋。	著しく糙渋。
(痩果の刺毛) 鱗片より短かい。	鱗片より僅かに長いか，同長。	熟時僅かに鱗片より長い。
葉の下面及び鞘の横小脈は不明。	葉の下面及び鞘の横小脈は不明。	葉の下面及び上部に明らかな横小脈がある。

茲で興味のある問題は上記コマツカサアブラガヤとヒメマツカサススキ *Scirpus karuizawensis* Makino との関係である。ヒメマツカサススキはコマツカサススキに大変良く似てゐるが，分花序はコマツカサススキより遥かに小形で而も数多く着き，それを構成する小穂の数は矢張りコマツカサススキよりずつと少いので区別出来る。それ故，コマツカサアブラガヤは一見ヒメマツカサススキに似て来る。事実一方ではヒメマツカサススキの原産地(信濃：軽井沢)には同じ様にコマツカサススキとアブラガヤの

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双方が生じている事から，ヒメマツカサススキをコマツカサススキとアブラガヤの雑種と見る考へ方もある。しかしヒメマツカサススキとコマツカサアブラガヤとを比較すると，前者では痩果は正常であるのに対して後者では不完全（不稔）であり，分花序の枝は前者で平滑だが後者ではざらつき，小穂は前者では赤褐色ではなく，更に稈は前者では丸く節に特別の色彩のない事コマツカサススキと同様だが，後者の稈は鈍三稜形で節は褐色となりこの点アブラガヤに近い。この様な外形的な不一致と下記の如き分布上の一事から私達はヒメマツカサススキは先づはコマツカサススキとアブラガヤの雑種ではないものと考え度い。序に今，外形的不一致を指摘したが，普通雑種は外形が凡そ不安定なものであつて，その点はコマツカサアブラガヤでは個体による形のくづれはあつて多小両親のいづれか一方に近いものがある。しかし，斯様な形のくづれはヒメマツカサススキではむしろ見られないのである。

ヒメマツカサススキの産地としては軽井沢のほかに，東大の山崎氏は甲斐鳳凰山麓鷹の巣で採集されてゐる。一方北鮮のテフセンマツカサススキ *Scirpus jaluanus* Nakai, ex Kitagawa は全くヒメマツカサススキと変りがないので，ヒメマツカサススキはむしろ中部地方の山地によくある所謂大陸要素の植物の一つに考へた方が宜敷い様である。

終りにコマツカサアブラガヤの種小名 *Fujimakii* は故藤巻惇氏に因む。同氏は以前岩手大学にあつて菊地の門弟，小山の友人としてカヤツリグサ科の分類に専念されたが研究半ばで病没されたのは遺憾な事である。又，材料の点で御手数を煩はした東大の山崎敬氏と軽井沢の佐藤邦雄氏に御礼申し上げ度い。

Scirpus (§ Taphrogeton)×**Fujimakii** M. Kikuchi & T. Koyama, hybrida nova.

Hybrida naturalis inter Sc. fuirenoides Maxim. et. Sc. Wichurai Böcklr.; Sc. karuizawensi Makino ut videtur similis est, differt tamen ab hoc spiculis fusco-ferrugineis oblongo-obovoideis, corymbi ramis ramulisque conspicue scabris, culmo obtuse trigono ad nedos fuscotincto, et inflorescentiae partialis formâ.—Culmi ad 9 dm alti 3-5-nodosi; folia rigida margine scabra basi longe vaginantia haudo septato-nodulosa; anthelae 2 ad 4 distantes, laterales simplices subtriglomerulatae, terminalis composita pluriglomerulata radii quique minus scabri; spiculae glomerulis subirregularibus congestae 6-9 mm longae circiter 3 mm crassae ferrugineo-fuscae; nucis setae hypogynae squamam subaequantes; caeteroquin paene sicut *Sc. Wichurai* Böcklr.

Honshu: Kuriyagawa marsh, nr. Morioka, Prov. Rikuchu. M. Kikuchi, 28, Oct., 1956!—Holotype in TNS; Kyushu: Senjomuda in Prov. Higo. S. Kawagoe, 17585!—Hb. Kagoshima Univ.

A new natural hybrid of Bulrush, between *Sc. fuirenoides* Maxim. and *Sc.*

Wichurai Böcklr., was found at two localities in Japan. This bears just an intermediate appearance between the two parents, its red-furrugineous spikelets at apices of scabrous rays and obtusely 3-angled culms brown tinged at each node being of the characters of *Sc. Wichurai*, and its glomerate spikelets and shorter bristles of nuts being of those in *Sc. fuirenoides*. It is of interest that some specialists have been of opinion that *Sc. karuizawensis* must also be a hybrid between the two species in question. This new hybrid, *Sc. Fujimakii*, of course resembles *Sc. karuizawensis* at a glance, there, however, are some disagreements between these two plants in morphological characters in addition to the nuts always sterile in the former and perfect in the latter. *Sc. karuizawensis* on the other hand, is identical with *Sc. jaluanus* occuring in the northern Korea. This suggests that *Sc. karuizawensis* must be an example of so-called continental elements often noted in the mountainous region of the Central District of Japan. Thus we consider that *Sc. karuizawensis* is not to be a hybrid between *Sc. fuirenoides* and *Sc. Wichurai*.

回 奥山春季著：**原色日本野外植物図譜 1. 春から初夏の植物.** 採集した植物を 60～90 cm のガラス板に，その持ち味を表わしながら組合せ，カラーフィルムで撮影し，これから製版した図版が 88 頁，収蔵された植物が 515 種，解説文は 178 頁，B 5 版の豪華版である。季節感にあふれた図譜という計画であるから，分類に無関係に，季節季節の植物を撮影順に排列してある。そして図版毎に撮影期日が記入してあるので，5 月上旬から中旬に採集した，或は開花する植物を知ろうとすれば，第 23 図版から第 31 図版を探してゆけばその名を知ることができるというしくみになつている。解説は，和名，学名，簡にして要を得た記載，花期，分布の順で，植物の特徴をつかむことができる。記載を補うために，処処に凸版部分図（これは大きすぎて調和はよくないが）があり，余白を利用して植物の分布図をいれたのは新機軸であろう。植物は関東地方が中心であるが，北海道や九州から送られたものもあり，相当苦心して集めたあとが見える。初心者向，一般向として推せんするが，ベテランにとつても楽しい本であり，得る所が少くないと思う。さきにでた北村・村田・堀：原色日本植物図鑑が図説日本植物誌であればこれは辻永：万花譜の楽しさと美しさを持つた野外植物図譜といえよう。発行所東京 誠文堂新光社 昭和 32 年 7 月 5 日発行 定価 2,000 円（佐竹）

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